

P.P. 2038.

# THE ZOOLOGIST:

A MONTHLY JOURNAL

OF

## NATURAL HISTORY.

---

FOURTH SERIES.—VOL. XIX.

---

EDITED BY

FRANK FINN, B.A., F.Z.S.

LONDON:

WEST, NEWMAN & CO., 54, HATTON GARDEN.

SIMPKIN, MARSHALL & CO., LTD.

---

1915.



## P R E F A C E.

---

IN spite of the dread crisis this country, and to a certain degree the whole of civilization, is now encountering, zoology as a study is showing a marvellous amount of vitality; the Zoo gains a full attendance of visitors, and all our leading animal dealers are still in business; zoological periodicals maintain their issues, and, in particular, the 'Zoologist' not only does this, but, in the seventy-second year of its existence, shows itself as strong as ever it was, and very much stronger than it has been for many years. That the longer papers should come in regularly was only to be expected in the case of a journal so hospitable as ours has always been; what is particularly interesting and important as a sign of vitality is the abundance of short notes, which this year average nearly a dozen per month, a number far greater than has been approached for several years past. This is as it should be, and is in accordance with the character of the 'Zoologist' as the most typically English of zoological publications, and that which most nearly approaches the character of a national institution among them. For this relief from the fear which must necessarily overshadow a small specialist publication in troublous times like these, we owe sincere thanks to our supporters both new and old, to the contributors of long articles and short notes alike, and we feel that they share our gratification in the happy result to the magazine.

There is enough, too, to sadden us at this time quite apart from the world-war, for the hand of death has been heavy on those connected with zoology during the past year. Not only have we had to record the death of our proprietor, Mr. T. P. Newman, whose public-spirited maintenance of our Journal was of greater service to science than many a bulky volume that

has been published in its name ; M. Fabre, the great French entomologist, has gone ; Mr. R. Lydekker, the well-known palaeontologist and sound and dignified popularizer of the zoology of the higher groups ; Dr. E. A. Minchin, the celebrated protozoologist ; Mr. R. Barrington, the veteran Irish naturalist, whose first communication was made to the 'Zoologist,' which he steadily supported for many years with numerous notes ; and lastly, just as we go to press, we hear of the death of Mr. H. E. Dresser, most kindly and sensible of ornithologists, and the author of unrivalled works on the birds of Europe and of the palaeartic region generally. Most of these, it is consoling to reflect, had reached a ripe age, as students of our science so commonly do.

As against these melancholy happenings we have to record the publication of some most important and interesting works. Colonel T. Roosevelt's book on the 'Life-histories of African Big Game,' which, though by an American, is published here, with its philosophical criticisms of current theories, and Mr. J. L. Bonhote's book on 'Vigour and Heredity,' with its wealth of experiment and lucid exposition, will be much heard of yet and have a stimulating effect ; while Mr. A. Thorburn's magnificent book on 'British Birds,' still in progress, touches the high-water mark of excellence in production. Altogether, with much to grieve for, we have much cause for thankfulness ; Britons are holding their own in our science as well as in arms.

## CONTENTS.

---

### ALPHABETICAL LIST OF CONTRIBUTORS.

APLIN, O. V., F.L.S., M.B.O.U.  
A grey Hare, 67; The meaning of "Katones," 68, 117, 156; A letter from Thomas Pennant, 69; Blackbird's and Robin's joint nest, 194; Notes on the Ornithology of Oxfordshire 201-12; Grey Squirrel in Buckinghamshire, 354; Remains of Roe-Deer, &c., 354; Gannet nesting in Orkney, 433

ATTLEE, H. G.  
Bird-notes for Oxford district in 1913 and 1914, 109-12

AUSTEN, Miss W.  
Long-tailed Tits in a London garden, 80

BARRINGTON, RICHARD M.  
Sense of Direction in Birds, 115, 194

BEDFORD, M.  
Mandarin Ducks at Woburn, 432; Pheasants feeding in trees, 432

BELL, ALFRED  
Pleistocene and later Bird-fauna of Great Britain and Ireland, 401-12

BLAKE, J.  
Notes on Birds around Cardiff, 54-7; Bird-notes from Cardiff in 1915, 468

BLATHWAYT, Rev. F. L., M.A., M.B.O.U.  
Whiskered Bat in Lincolnshire, 227

BOOTH, H. B.  
Birds travelling north in autumn, 113

BROOKS, F. H.  
Hermaphrodite Fowl, 194; Abnormality in Edible Crab, 272

BROWN, G. F.  
Wandle freshwater shells, additions to list of, 359

BUTTERFIELD, E. P.  
Curious nesting-places of the Mistle-Thrush, 115; Distribution of Thrushes in winter, 115; Birds travelling north in autumn, 152; Symmetrically marked variety of the Redbreast; Individual attachment in Redbreast, 153; Critical notes on some statements of Newton on birds, 182-5; Cuckoo problems, 354-7; Singular nest of Willow-Warbler, 357; Blue variety of Cuckoo's egg in Hedge-Sparrow's nest, 357

CALLARD, Miss M.  
Longevity of Hedgehog, 113; Colour-variations in a Chameleon, 118; Colour-transitions amongst Batrachians, 118; Parental instinct in Rooks, 155; Appetite of Slugs for green material, 159; Animal fascination, 226

CARDEW, R.  
Appetite of Snails for green material, 196

CARLTON, HAROLD S.  
Coots infested with vermin, 157

COCKS, ALFRED HENEAGE, M.A., F.S.A., F.G.S., M.B.O.U.  
Colour-change in fish, 396; Whale on the Lincolnshire coast in the seventeenth century, 466

COOK, F. C.  
Birds travelling north in autumn, 35; Migration and other ornithological notes from Lowestoft (1914), 328-36

CROSS, W.  
Parrot learning by experience, 194

CUMMING, S. G.  
Nesting of *Troglodytes parvulus*, 85

DAWS, WILLIAM  
Variety of Water-Shrew, 226; Malformed beak of the Jackdaw,

231; Notes on the Edible Crab, 234; Albino Water-Vole in North Notts, 392; Albino Pheasant, 394; Dunlin in North Notts in summer plumage, 395; Little Owl in North Notts, 395

**DESPOTT, G.**  
The reptiles of the Maltese Islands, 321-7

**DEWAR, J. M., M.D.**  
The sense of Direction in Birds, 41, 53, 156; The relation of the Oystercatcher to its natural environment, 281-91, 340-46, 376-83, 426-31, 458-65

**ELCOME, WILLIAM**  
Hawks selecting white young Pheasants; young Pheasants flying without apparent cause, 230

**ELLIOTT, J. STEELE**  
Rose-coloured Starling in Bedfordshire, 118; Distribution of the Polecat in Bedfordshire, 151; Black Redstart in Bedfordshire, 155; Hen-Harrier in Bedfordshire, 155; Notes on the Cervidæ of Bedfordshire, 227; Moorhen nesting in disused nests of Magpie, 231; A strange nesting association of the Squirrel and the Sparrow-Hawk, 269; Increase of Little Grebes nesting in Bedfordshire, 269; On the laying of the Cuckoo, 270; Notes on the laying of the Cuckoo and the removal of eggs of foster-parent, 316; Calling of the Cuckoo in July, 318; Migration of Swifts, 319; Stoat swimming after its prey, 354; Weasel feeding upon Frogs, 392; Some notes on the nesting of a pair of Moor-hens, 433-6; Black Redstart in Cambridgeshire, 467; Late nesting of the Swallow, 467

**ELMHIRST, RICHARD, F.L.S.**  
Notes on Anemones from the Millport Marine Biological Station, 21-24; Stone pellets cast by Curlews, 70

**FINN, FRANK, B.A., F.Z.S.**  
Display of female *Eunetta falcata*, 36; Bark-peeling habit of Sparrow, 38; Elephant scratching with fore-foot, 67; Mouse surviving a fall from a height, 67; "Paget's Pochard" at Kew,

195; Colour-change in soft parts of birds of prey, 195; Pink eyes in Dog, 226; Successful courtship of Javan Peafowl, 232; Use of Muscovy Ducks and Guinea-fowls, 233; Sparrow robbing Starling, 271; Quadruple Duck-hybrids at Kew, 272; Mandarin Duck feeding in a tree, 395; Grey-breasted variation in Robin, 436; Yellow bill in female and young Black-birds, 436; Variations in Wood-Pigeon, 469

**FOWLER, W. WARDE**  
Singular nest of Willow-Wren, 316

**GROUND, THOMAS**  
Leach's Petrel in Worcestershire, 115; The meaning of "Katones," 116

**GURNEY, J. H., F.Z.S.**  
The meaning of "Katones," 117; Ornithological Report for Norfolk (1914), 121-46, 233; Willughby's plate of the Gannet, 157

**HAVILAND, MAUD D.**  
Notes on the courtship of the Lapwing, 217-25; Notes on the breeding habits of the Willow-Grouse at the mouth of the Yenesei River, Siberia, 241-4

**HOLLOWAY, Miss R.**  
Colour-discrimination in Dog; Dog separating combatants, 316; Vegetarian appetite in Cat, 316

**HONY, G. BATHURST**  
Bird-notes from the Mediterranean, 106-8

**JOHNSON, C. F.**  
Singular nest of Willow-Warbler, 356-7

**KELSALL, Rev. J. E.**  
Mammalia of Hampshire and Isle of Wight, 80

**LANGDALE, Rev. H. MARMADUKE**  
Hobby in Petersfield district, 396

**LAVER, HENRY**  
Distribution of the Polecat and Yellow-necked Mouse in Essex, 151; Four-bearded Rockling in the Colne, 319

**LEWIS, STANLEY**  
Rare nesting-site for the Goldfinch, 113; Hen Pheasant transporting chicks, 114; Buff-backed Heron in Somerset, 318

**LONES, T. E., M.A., LL.D., B.Sc.**  
Notes on the Fauna of the Country of the Chess and Gade, 161-8, 413-25

**MASEFIELD, JOHN R. B.**  
Natterer's Bat in Staffordshire, 315; Albinism in the Serotine Bat, 315; Occurrence of a Reeve in Staffordshire, 468

**McWILLIAM, Rev. J. M.**  
Notes on the Tree-Sparrow in Donegal, 297-302

**MILLIGAN, H. N., F.Z.S.**  
Rate of regeneration in a Brittle-star, 119; Notes on the way in which a Starfish eats a Pipe-fish, 147-150; Observations upon the behaviour of a captive Rockling, 190-3, 319; Notes on Starfishes feeding upon *Siphonostoma typhle*, 213-16; The habits of the Four-horned Spider-Crab, 245-56; Notes on the eggs and larvae of a Sea-Bullhead, 292-6; The resting-place of a Velvet Crab, 320; Some experiments on colour-change in the Tench, 337-9; Tameness in several Blennies, 358; Tameness in a Sea-Bullhead, 359; Hardiness in the Common Prawn, Æsop Prawn, and Shrimp, 359; *Acanthocinus aedilis* at Sydenham, 360; Common Starfish attacking *Syngnathus acus*, 437; Rate of locomotion in a Sun-Star, 437; Spider-Crabs fastening beef to their bodies, 438; Observations on the foreign objects carried by the Purple-tipped Sea-Urchin, 441-53

**MORGAN, WALTER**  
*Vanessa antiopa* actually in Camberwell district, 272

**MORRIS, ROBERT**  
Rare nesting-site for the Goldfinch, 154; Hornet's nest in the ground, 396

**NEWMARCH, C. T.**  
Black-cheeked Love-birds nesting in cage, 195; Ring-necked Parrakeets at large in London, 486

**NICHOLS, WALTER B.**  
Unusual site of Rabbit's nest, 226

**PATTEN, Professor C. J., M.A., M.D., Sc.D.**  
Aquatic Warbler, on migration,

obtained on Tuskar Rock, with special reference to the plumage markings as compared with those of the Sedge-Warbler, 81-92; Occurrences of Aquatic Warblers in the British Isles, 152; Fulmar Petrel on Inishtrahull Island, Co. Donegal, 153

**PATTERSON, ARTHUR H., A.M.B.A.**  
Some Fish-notes from Great Yarmouth and neighbourhood (for 1914), 1-20; Pied Blackbird at Great Yarmouth, 36; Some ornithological War-notes from, 93-7; Comber Wrass at, 157; Some miscellaneous notes from (1914-15), 361-75

**PITT, Miss F.**  
Distribution of Polecat and of Yellow-necked Mouse, 113

**ROBINSON, H. W., M.B.O.U., F.Z.S.S.**  
Long Rough Dab in the Irish Sea, 71

**ROPE, G. T.**  
Cats with abnormal tastes, 393; Rough-legged Buzzard in Suffolk, 466; Norfolk Plover in Suffolk in November, 467; Grey Shrike in Suffolk, 467

**ROSE, JOHN**  
Starling and Sparrow in captivity, 116

**SARGEAUNT, A. ST. GEORGE**  
*Planes minutus* at Padstow, 118

**SCOTT, HUGH**  
A correction in "The Fauna of Reservoir Plants," 71

**SELOUS, EDMUND**  
A diary of ornithological observation made in Iceland during June and July, 1912, 58-66, 169-74, 303-7

**SHEPHERD, Colonel C. E.**  
On the location of the Sacculus and its contained Otoliths in Fishes, 25-34; The pharyngeal teeth of Fishes, 98-105, 454-7; The "Lapillus" in Fishes, 257-62

**SPIERS, Mrs. J. K.**  
A London Bee-hive, 159

**SWANTON, E. W.**  
A Catalogue of the Land and Freshwater Mollusca of Sussex, 175-81, 263-8, 308-14, 347-53, 384-91

SYMES, JOSEPH H.  
Late nesting of Cirl-Bunting in  
Somerset, 432

TUCK, Rev. JULIAN G., M.A.  
Return of summer migrants to old  
haunts, 195; The food of the  
Tawny Owl, 231; Notes on  
nest-boxes, 318; Hornets' nest  
in the ground, 320; Stock-Dove  
breeding in a church-tower, 395;  
Localized occurrence of Black-  
backed Gulls, 432

TWYMAN, ROSAMOND S.  
Avicultural notes, 39

VICTOR-JONES, Rev. H., F.Z.S.  
A note on parasitic *Kerona*, 186-9

WATT, HUGH BOYD  
Grey Squirrel in Bucks and else-  
where, 393

WIGLESWORTH, J.  
Leisler's Bat in Somerset, 432

WILSON, WILLIAM  
Observations on bird-life in Aber-  
deenshire, 229; Some migratory  
incidents in May, 230; Some  
migration and other notes for  
June, 271

WORKMAN, W. H., M.B.O.U.  
Late stay of Fieldfares in North  
of Ireland, 271

## PLATES

	PAGE
PLATE I. Sedge-Warblers (Figs. 1, 2, 3, 4) and Aquatic Warbler (Fig. 5) from Tuskar Rock Light Station, showing plumage-markings of the upper parts (see p. 92) . . . . .	to face 81
PLATE II. Willow-Grouse ( <i>Lagopus lagopus</i> ): Nest, Young, and Female . . . . .	,, 241
PLATE III. Sussex Mollusca: <i>Helicella caperata</i> , <i>H. heripensis</i> , <i>H. cartusiana</i> , <i>Helicodonta obvoluta</i> , and <i>Helicigona lapicida</i> (see Note, p. 309) . . . . .	,, 309
PLATE IV. Sussex Mollusca: <i>Planorbis vorticulus</i> and <i>Valvata macrostoma</i> (see Note, p. 389) . . . . .	,, 387

## ALPHABETICAL LIST OF SUBJECTS.

Abramis brama, 9  
 Abraxas grossulariata, 200  
 Acanthias vulgaris, 14, 17  
 Acanthocinus aedilis at Sydenham, 360  
*Acerina cernua*, 454  
*Acrocephalus aquaticus*, 81  
*Actinia equina*, 21  
*Adineta vaga*, description of, 162  
*Æx galericulata*, 395  
*Agapornis nigrigenis*, 195  
*Alauda arvensis*, Newton on, 184  
 'Alligator and its Allies,' 438  
*Alligator mississippiensis*, 439  
 'Amateur Menagerie Club Year-Book,' 238, 398  
*Ammodytes lanceolatus*, 99  
*Amphipnous cuchia*, 98  
*Anabas scandens*, 103  
 Anemones from Millport Marine Zoological Station, 21-4  
 Animal fascination, 226  
 'Annals of Tropical Medicine and Parasitology,' 76, 273  
*Apis florea* and *A. mellifica*, 77  
*Argya fulva*, 240  
*Arion ater*, 159  
*Asterias glacialis* and *A. rubens*, 450; *rubens* (figs. 1 and 2), 147-50, 437  
*Asterina gibbosa*, 450  
*Atherinichthys argentinense* (fig. I.), 99, 100; *bonarensis*, 100  
*Anchomeromyia luteola*, 77  
*Auk*, Little, 143, 368  
 'Auk' (quarterly), 276, 471  
 'Austral Avian Record,' 274  
 Avicultural notes, 39

Bass, 7  
 Bat, Leisler's, in Somerset, 432; Natterer's, in Staffordshire, 315; Serotine, albinism in, 315; Whiskered, in Lincolnshire, 227  
*Bathygadus furvescens*, 104  
*Batrachia*, colour-transitions amongst, 118  
 Bee-hive, a London, 159  
*Belone acus*, 98  
 Bird-fauna, Pleistocene and later, of Great Britain and Ireland, 401-12

Bird-life in Aberdeenshire, notes on, 229  
 Bird-notes from Mediterranean, 106-8; for Oxford district, 109-12; from Cardiff, 468  
 Birds around Cardiff, notes on, 54-7; critical notes on some statements of Newton on, 132-5; of prey, colour-changes in, 195; sense of direction in, 41-53, 115, 156, 194; travelling north in autumn, 35, 113, 152  
 Blackbird, pied, at Great Yarmouth, 36  
 Blackbirds, yellow bill in female and young, 436  
 Blackbird's and Robin's joint nest, 194  
*Blennius gattorugine* at Great Yarmouth (fig.), 11; *pholis*, 358  
 Bluethroat in Norfolk, 136  
*Bombus agrorum*, &c., 77  
 Books NOTICED:—  
 A List of British Birds, 197  
 A List of the Birds of Malta, by Giuseppe Despott, 240  
 Annals of Tropical Medicine and Parasitology, 76, 273  
 Brazil, by J. C. Oakenfull, 278  
 British Birds, written and illustrated by A. Thurnburn, 160, 472  
 'British Birds' (monthly), 278  
 Bulletin of the British Ornithologists' Club, vol. xxxiv., edited by W. R. Ogilvie-Grant, 74  
 Country Sights and Sounds, by G. T. Rope, 439  
 Fauna of British India—Mollusca (Freshwater Gastropoda and Pelecypoda), by H. B. Preston, 198  
 Hamlyn's Menagerie Magazine, 240  
 Hand-list of the Birds of Borneo, by J. C. Moulton, 275  
 Junior Botany, 276  
 Life-histories of African Game Animals, by Theodore Roosevelt and Edmund Heller, 235  
 Mind in Animals, by E. M. Smith, 399

Report of the Punjab Department of Fisheries, 274  
 Report on Cetacea Stranded on the British Coasts in 1914, by Dr. F. S. Harmer, 239  
 Report on the Trout-cultural Operations in the Punjab, &c., by G. C. L. Howell, 275  
 Reptiles and Batrachians, by E. G. Boulenger, 200  
 Spencer Fullerton Baird, by William H. Dall, 397  
 Text-book of Embryology, vol. i., Invertebrata, by E. W. Macbride, edited by Walter Heape, 37  
 The Alligator and its Allies, by Albert A. M. Reese, 438  
 The Amateur Menagerie Club Year-Book, edited by G. Tyrwhitt Drake, 238, 398  
 The Auk (new series), 276, 471  
 The Austral Avian Record, edited by Gregory M. Mathews, 274  
 The Determination of Sex, by L. Doncaster, 199  
 The Fauna of British India—Mollusca (Trochomorphidae-Janellidae), by G. K. Gude, 120  
 The House-Fly, by C. Gordon Hewitt, 75  
 The Minor Horrors of War, by Dr. A. E. Shipley, 199  
 The Wonders of Animal Life, by W. S. Berridge, 440  
 Through Western Madagascar, by Walter D. Marcuse, 400  
 Transactions of the Paisley Naturalists' Society, 78  
 Typical Flies, by E. K. Pearce, 399  
 Vigour and Heredity, by J. L. Bonhote, 469  
 Water Reptiles of the Past and Present, by Samuel Wendell Williston, 72  
 'Brazil,' 278  
 'British Birds,' 160, 472  
 'British Birds' (monthly), 278  
 Brittlestar, rate of regeneration in (fig.), 119  
 'Bulletin of the British Ornithologists' Club,' 74  
 Bullhead, Sea, tameness in, 359  
 Bunting Cirl, nesting late, 482  
 Bustard, Little, in Norfolk, 140  
 Buzzard, Rough-legged, in Suffolk, 466  
 Cairina moschata, 36  
 Calandrella brachydactyla, 240  
 Callidina bidens, description of, 161; bihamata, description of, 162  
 Cancer pagurus, 234  
 Cantharus lineatus, 7  
 Capreolus caprea, 229  
 Caprimulgus europaeus, Newton on, 184  
 Capros aper, 7  
 Caranx trachurus, 9  
 Carcinus mænas, 93  
 Cats with abnormal tastes, 316, 393  
 Centetes ecaudatus, 120  
 Cervidæ of Bedfordshire, notes on, 227  
 Cervus dama, 228; elaphus, 227; megaceros, 227  
 Chalcides ocellatus, 325  
 Chameleo pumilus, 399  
 Chameleon, colour-variations in, 118  
 Chess and Gade, fauna of, 161-8, 418-25  
 Cinclus aquaticus, Newton on, 185  
 Circus cyaneus, 155  
 Cod blown on deck by mine-explosion, 17  
 Colour-change in birds of prey, 195; in Chameleon, 118  
 Coluber leopardinus, 326  
 Columba domestica, intermedia, livia, 471; palumbus, 469  
 Coots infested with vermin, 157  
 Corolla adamsi, 120  
 Cormorants nesting in Norfolk (fig.), 135  
 Corvus splendens, 107  
 Cottus bubalis, 359  
 COUNTY RECORDS:—  
*Bedfordshire* — Rose-coloured Starling, 118; Polecat, 151; Hen-Harrier, 155; Black Redstart, 155; Cervidæ of the county, 227; Moorhen, 231; Little Grebe, 269; Cuckoo, 270, 318; Mandarin Ducks, Pheasants feeding in trees, 432  
*Buckinghamshire* — Grey Squirrel, 354, 393  
*Cambridgeshire* — Rooks, 155; Black Redstart, 467  
*Cheshire* — Wren, 35  
*Cornwall* — Planes (Nautilograpus) minutus, 118  
*Cumberland* — Willow-Wren, 357  
*Essex* — Green Sandpiper, 68; Polecat and Yellow-necked

**Mouse**, 151; Rabbit's nest, 226; Four-bearded Rockling, 319

**Hampshire**—Mammalia, 80; Serotine Bat, 315; Hobby, 396

**Herefordshire**—Swift, &c., 39–40

**Hertfordshire**—Fauna of Chess and Gade, 161–8, 413–25

**Kent**—Coot, 157

**Lincolnshire**—Whiskered Bat, 227; Whale on coast in seventeenth century, 466

**Middlesex**—Eunetta falcata, 36; Sparrow, 36; Long-tailed Tit, 80; A London Bee-hive, 159; Parrot learning by experience, 194; Black-cheeked Love-birds nesting in cage, 195; Colour-change in birds of prey, 195; Hawks and young Pheasants, 230; Sparrow robbing Starling, 271; Duck-hybrids, 272; Mandarin Duck, 395; Ring-necked Parrakeets, 436

**Norfolk**—Fish-notes, 1–20; Blackbird, 36; Plaice (abnormal-coloured), 79; Ornithological War-notes, 93–7; Ornithological Report for 1914 (notes, records, &c.), 121–46, 233; Comber Wrass at Yarmouth, 157; Notes from Yarmouth, 1–20, 361–75

**Nottinghamshire**—Water-Shrew, 226; Jackdaw, 231; Edible Crab, 234; Water-Vole, 392; Pheasant, 394; Dunlin, 395; Little Owl, 395

**Oxfordshire**—A grey Hare, 67; Bird-notes, 109–12; Blackbird's and Robin's joint nest, 194; Ornithology of the county (1914), 201–12; Willow-Wren, 316

**Shropshire**—Polecat, 113; Yellow-necked Mouse, 113; Natterer's Bat, 315; Stoat, 354; Roe-Deer, &c., 354; Weasel, 392; Moorhen, 432

**Somersetshire**—Goldfinch, 113; Pheasant transporting chicks, 114; Buff-backed Heron, 318; Leisler's Bat, 432; Cirl-Bunting, 432

**Suffolk**—Birds travelling North in autumn, 35; Summer migrants, 195; Tawny Owl, 231; Nest-boxes, 318; Hornets' nest, 320; Notes from Lowestoft, 328–36; Stock-Dove, 395; Gulls, 432; Rough-legged Buzzard, 466;

Norfolk Plover, 467; Grey Shrike, 467

**Surrey**—Hedgehog, 113; Chameleon, 118; Batrachia, 118; Slugs' appetite for green material, 159; "Paget's Pochard" at Kew, 195; Animal fascination, 226; Vanessa antiopa, 272; Acanthocinus aedilis, 360

**Staffordshire**—Natterer's Bat, 315; Reeve, 468

**Sussex**—Goldfinch, 154; Land and Freshwater Mollusca of the county, 175–81, 263–8, 308–14, 347–53, 384–91; Hornets' nest in ground, 396

**Worcestershire**—Leach's Petrel, 115; Swallow, 467

**Yorkshire**—Mistle-Thrush, 115; Distribution of Thrushes in winter, 115; Redbreast, 153; Blue variety of Cuckoo's egg, 357

'Country Sights and Sounds,' 439

Crab, Edible, notes on (fig.), 234, 272; Velvet, resting-place of a, 320

Crab claw, curious, 18

Crabs and Lobsters landed at Great Yarmouth, 18

Crangon vulgaris, 3, 360

Critical notes on some statements of Newton on Birds, 182–5

Crossopus fodiens, 226

Crows and Mussels, 370

Cuckoo, notes on laying of, and removal of eggs of foster-parent, 270, 316; calling in July, 318; problems, 354–7; egg of (blue variety), in Hedge-Sparrow's nest, 357

Cuculus canorus, 270, 316, 318, 354, 357; Newton on, 182

Curlew, stone pellets cast by, 70

Cyclops fuscus, 419; serrulatus (figs. 21 to 28), description of, 414–25

Cyclopterus lampus, 6

Cypselus apus, 319

Dab, Long Rough, in Irish Sea, 71

Dendrocygnas viduata, 400

Dendroica tigrina, 278

Determination of Sex, 199

Direction, sense of, in Birds, 41, 115, 156, 194

Discoglossus pictus, 327

Ditrema temminckii (fig. I., 3), 457

Dog, colour-discrimination in, 316; pink eyes in, 226; separating combatants, 316

Dove, Stock, breeding in a church-tower, 40

Drepanopsetta platessoides, 71

Duck, Eider, 366; Mandarin, feeding in a tree, 395,—at Woburn, 432

Duck-hybrids of quadruple descent at Kew, 272

Dunlin in summer plumage, 395

Echinus esculentus and *E. miliaris*, hybrids between, 37

Echinus esculentus and *Echinocardium cordatum*, larvæ bred from, 38

Echinus esculentus, 448; *miliaris*, 441, 450

Ectopistes migratorius, 277

Egg of Cuckoo, blue variety, in Hedge-Sparrow's nest, 357

Elephant scratching with forefoot, 67

Emberiza miliaria, 240

Emydidae, 74

Equus asinus, 399

Euchlanis dilatata, description of (fig. 20), 164

Eulabes javanensis and *E. religiosa*, 270

Eunetta falcata, display of female, 36

Falco tinnunculus, 240

Fannia canicularis, 75

"Fauna of British India," 120, 298

Fauna of Chess and Gade, 161–8, 413–25

"Fauna of Reservoir Plants," correction in, 71

Fauna, Pleistocene and later Bird, of Great Britain and Ireland, 401–12

Felis catus, 79

Fieldfare, late stay in North of Ireland, 271

Fierasfer acus, 98

Fish killed by mines, 12, 17; colour-change in, 396

Fish-notes from Great Yarmouth and neighbourhood (1914), 1–20

Fishes, pharyngeal teeth of, 98–105, 454–7

Freycinetia arnotti, 71

Gadus luscus, 3, 18; *minutus*, 450; *virens*, 12

Gampsosteonyx, 200

Gannet, alleged destructiveness to Herring, 15; Willughby's plate of, note on, 157; nesting in Orkney, 433

Gasterosteus aculeatus var. *semi-armatus*, 7

Globidens, 73

Goldfinch, rare nesting-sites for, 113, 154

Grebe, Great Crested, at Hoveton Broad, 134; Little, increase of nesting in Bedfordshire, 269

Grouse, Willow, breeding habits at mouth of Yenesei River, Siberia (Plate II.), 241–4

Gulls at Great Yarmouth, &c., notes on, 1, 14, 93, 97, 140, 146, 372; Black-backed, localized occurrence of, 372, 432

Haliastur indus, 240

'Hamlyn's Menagerie Magazine,' 240

'Hand-List of the Birds of Borneo,' 275

Hare, a grey, 67

Harrier, Hen, in Bedfordshire, 155

"Harvest of the sea" at Great Yarmouth (1914), figures of, 14

Hawks selecting white young Pheasants, 230

Hedgehog, longevity of, 113

Helicella caperata, &c., in Sussex (Plate III.), 308–14

Helix aspersa, 196

Helotarsus ecaudatus, 195

Hemidactylus turcicus, 321

Hemitragus, 120

Hermaphrodite fowl, 194

Herodias, 274

Heron, Buff-backed, in Somerset, 318

Herring, stomach-contents of a, 7; harvest seriously injured by German mines off East Coast, 12

Herrings with both male and female organs, 20

Hobby in Petersfield district, 396

Hoplostethus mediterraneus, 104

Hornets' nest in ground, 320, 396

"House-Fly," 75

Hybrid Swan × Goose, 145; between *Echinus esculentus* and *E. miliaris*, 37

Hydra fusca, *H. viridis* and *H. vulgaris*, 187

Hysteroecarpus traski (fig. I., 2), 466

ICELAND — Diary of ornithological observation made in, during June and July (1912), 58–66, 169–74,

303-7; Merlin, 58-66, 169-73; Whimbrel, 174; Red-necked Phalarope, 303-7

**IRELAND**—Long Rough Dab in Irish Sea, 71; Aquatic Warbler on migration, 81-92; at Fair Isle, 152; Fulmar Petrel, 153; Fieldfare, 271; Tree-Sparrow, 297-302

Jackdaw, malformed beak of, 231  
 "John-Dory" off Norfolk coast, 5  
 'Junior Botany,' 276  
 "Katones," meaning of, 68, 116-17, 156  
 Kerona polyporum parasitic on *Hydra viridis* (fig.), 186-9  
 Kestrel, Newton on, 184  
*Kuhlia marginata*, 105

Labridæ, notes on, 158  
*Labrus comber*, 158; *donovani*, 158; *maculatus* (var. *donovani*), 4, 158  
*Lacerta generalensis* ?, 322, 325; *muralis*, 322,—var. *filfolensis*, 322  
*Lagopus lagopus*, 241; *rupestris*, 243; *scoticus*, Newton on, 184, 242  
 "Lapillus" in Fishes, with list of species examined (twenty-four figs.), 251-62  
 Lapwing, courtship of, 217-25  
*Larus cachinnans*, 240; *canus*, 230; *marinus*, 70; *minutus* ?, 230  
*Lernea branchialis*, 19  
*Lestrigonus exulans*, 7  
*Leucophoxys candidissima*, 274  
 'Life-histories of African Game Animals,' 235  
*Limnæa*, 198  
*Linota cannabina* and *L. flavirostris*, Newton on, 184  
 'List of British Birds,' 197  
 'List of the Birds of Malta,' 240  
*Littorina littorea*, 362  
*Lota vulgaris*, 5  
 Love-Birds, Black-cheeked, nesting in cage, 195

*Machetes pugnax*, 468  
*Machilis*, 38  
 Mackerel glut in Dovercourt Bay, 8  
*Macrurus armatus* and *M. investigatoris*, 103  
*Macrorhamphus griseus* ?, 112  
 Maltese Islands, Reptiles of, 321-27:—  
 Gecko, Turkish 321; Wall, 321

Lizard, *Filfola* (fig. p. 322), 322; Fungus Rock (two figs., pp. 323, 325), 322; St. Paul's Islands (fig., p. 323), 322; Wall (fig., p. 323), 322

Skink, Ocellated, 325

Snake, Dark green, and black var., 326; Leopard, 326

Turtle, Loggerhead, 327

Frog, Painted, 327

Local names for the Reptiles of Malta, 327

**Mammalia** of Hampshire and Isle of Wight, 80

Martin, House, a white, 375; Sand, Newton on, 184

Mediterranean, Bird-notes from, 106-8

*Melanatria johnsoni*, 400

Merlin, breeding habits in Iceland, 58-66, 169-73

*Microtus amphibius*, 392

Migrants, summer, return to old haunts, 195

Migration and other ornithological notes from Lowestoft (1914), 328-36

Migratory notes for May and June, 230, 271

'Mind in Animals,' 399

'Minor Horrors of War,' 199

Miscellaneous notes from Great Yarmouth (1914-15), 361-75

**Mollusca**, Land and Freshwater, of Sussex (Plates III. and IV.), 175-81, 263-68, 308-14, 347-53, 384-91; New species, 175; Lusitanian elements, 176; Methods of dispersal, 177; Association with local archaeological remains, 179; Folklore, 181

*Monticola cyanus*, 240

Moorhens nesting in disused nests of Magpies, 231; notes on the nesting of a pair, 433

*Motacilla alba* and *M. raii*, 371

*Motela cimbria*, 319; *mustela*, 11, 190

Mouse surviving a fall from a height, 67; Yellow-necked, distribution of, 113, 151

*Mus flavicollis*, 151; *musculus*, 67

*Musca domestica*, 76

*Muscicapa atricapilla* and *M. grisola*, Newton on, 183

*Muscina stabulans*, 76

Muscovy Ducks and Guinea-fowls, use of, 233

Mussels prohibited as food at Great Yarmouth, 17  
*Mustela putorius*, 151  
*Myopotamus coypus*, 67  
*Myotis nattereri*, 315

*Nandus marmoratus*, 454  
*Neoditrema ransonettii* (fig. I., 1), 456  
*Nerophis aequoreus*, 147; ophidion, 150  
 Nest-boxes, notes on, 318  
*Nettum carolinense*, 471  
 Newton on Birds, notes on, 182-5  
 Norfolk, Ornithological Report for 1914 (two sketch-maps and two figs.), 121-46; Spring migration, 121; Breeding season (Cormorant, Spoonbill, Little Owl), 122; Autumnal migration, 124; Winter migration, 125; Rarities, 125; Great migration of Starlings, 128; Spoonbills at Breydon Broad, 130; Great Crested Grebe on Hoveton Broad, 134; Cormorants nesting in Norfolk, 135; Depredations of Starlings, 137; A flight of Gulls, 140; Arrival of Wood-Pigeons, 143; Food of Rooks and Wood-Pigeons, 144; Varieties, 145; Hybrid, 145; Marked Gulls, 146; A correction, 233  
*Nosema apis* and *N. bombyi*, 77  
*Notommata lacinulata*, description of (fig. 19), 163  
*Nyctalus leisleri*, 482  
*Nyctea nyctea*, 244

Obituary:—THOMAS PRICHARD NEWMAN (separate leaf, front of November 'Zoologist')  
 Observations on the foreign objects carried by the Purple-tipped Sea-Urchin, 441-53  
*Oceanodroma leucorrhoea*, 115  
*Edicnemus crepitans*, 467  
*Olor (Cygnus) buccinator*, 277  
*Ophiocephalus marulius* (fig. II.), 101-2  
*Onychodactylus*, 200  
*Ophiothrix fragilis*, 119, 150  
*Oreinus sinuatus*, 275  
 Ornithology of Oxfordshire (1914), notes on, 201-12  
*Orthagoriscus mola*, 11  
*Osphromenus olfax* and *O. trichopterus*, 455  
*Orgyia antiqua*, 79

Owl, Little, partial to centipedes, 124,—in North Notts, 395; Tawny, food of, 231  
 Oystercatcher, the relation to its natural environment, 281-91, 340-46, 376-83, 426-31, 458-65; Introduction, 281; Winter environment, 282, 288; Summer environment, 340, 376; Choice of a nesting site, 383, 426; Law of territory, 428; Optimum habit in winter, 458; Optimum habit in summer, 460; Résumé and conclusion, 465

"Paget's Pochard" at Kew, 195  
*Palæmon serratus*, 360  
*Palæornis torquatus*, 79, 436  
*Pandalus annulicornis*, 360; montagui, 2  
*Paragonimus*, 273  
 Parrakeets, Ring-necked, at large in London, 436  
 Parrot learning by experience, 194  
*Passer hispaniolensis*, 240; *italiae*, 40  
*Pastor*, *roseus*, 118  
*Pavo muticus*, 332  
*Peachia hastata*, feeding habits of, 23  
 Pea-fowl, Javan, successful courtship of, 232  
 Pennant, Thomas, a letter from, 69  
*Perca fluviatilis*, 454  
 Petrel, Fulmar, on Inishtrahull Island, Co. Donegal, 153; Leach's, in Worcestershire, 115  
 Phalarope, Red-necked, breeding-habits in Iceland, 303-7  
 Pharyngeal teeth of Fishes, 98-105, 454-7  
 Pheasant, albino, 394; feeding in trees, 432; hen, transporting chicks, 114; plants eaten by, 133; young, flying without apparent cause, 230  
*Phoenicopterus antiquorum* (*P. ruber antiquorum*), 280  
 Pigeon, Wood, food of, 144; variations in, 469  
 Pike on Norfolk Broads, 6; with two Bream in its stomach, 6  
*Pisa tetraodon*, 245  
 Plaice, abnormally coloured, 79; notes, 4  
*Planes (Nautilograpus) minutus* at Padstow, 118  
*Planorbis vorticulus* in Sussex (Plate IV.), 387  
*Platurus*, 73

Pleistocene and later Bird-fauna of Great Britain and Ireland, 401-12  
 Plover, Norfolk, in Suffolk in November, 467  
*Plutella maculipennis* (fig.), 137  
*Podiceps fluviatilis*, 269  
 Polecat, distribution of, 151; in Essex, 151  
*Polygarthra platyptera*, description of, 163  
*Polynemus tetradactylus*, 101  
*Porphyrio cœruleus*, 240  
*Portunus puber*, 320  
 Prawns, Common and *Aesop*, and Shrimp, hardness in, 359  
*Procellaria pelagica*, 240  
*Puffinus griseus*, 70

Rabbit's nest, unusual site of, 226  
*Rallidæ*, 240  
*Rangifer tarandus*, 228  
 Redbreast, symmetrically marked variety of, 153; individual attachment in, 153  
 Redshank, breeding in Oxfordshire, 206  
 Redstart, Black, in Bedfordshire, 155; in Cambridgeshire, 467  
 Reeve in Staffordshire, 468  
 'Report of the Punjab Department of Fisheries,' 274  
 'Report on the Trout-cultural operations in the Punjab, &c.,' 275  
 'Report on Cetacea stranded on the British coasts during 1914,' 239  
 Reports on Eastern Sea-Fisheries, interesting and profitable reading, 17  
 'Reptiles and Batrachians,' 200  
 Reptiles of Maltese Islands, 321-27  
 Roach, feeding on *Conferva rivularis*, 8  
 Robin, grey-breasted variation in, 436  
 Rockling, Five-bearded, behaviour of a captive (fig.), 190-3, 319; Four-bearded, in the Colne, 319  
 Roe-Deer, &c., remains of, 354  
 Rooks, parental instinct in, 155; food of, 144  
*Ruticilla titys*, 155, 467

*Sacculus*, and its contained otoliths in Fishes, notes on, with list of specimens examined (figs. VII., IV., V., VI.), 25-34  
*Sagartia davisi*, 21

Sandpiper, Common, Newton on, 184; Green, in Stour Valley, 68  
*Saxicola deserta*, 265; *œnanthe*, 230  
*Scomber scriptus*, 7

SCOTLAND—Anemones from Millport Station, 21-4; Sense of Direction in Birds, 41-53; Curlew, 70; Bird-life in Aberdeenshire, 229; Migratory residents, 230; Notes, 271; Oystercatcher, 281-91, 340-46, 376-83, 426-31, 458-65  
 Sea-Bullhead, notes on eggs and larvæ of, 292-6  
 Sea-urchin, Purple-tipped, observations on the foreign objects carried by, 441-53  
 Sense of Direction in Birds, 41-53, 115, 156, 194  
 Sex, determination of, 199  
 Shrew, Water, variety of, 226  
 Shrike, Grey, in Suffolk, 467  
*Sillago sihama*, 455  
*Siphonostoma typhle*, 147  
 Slugs' and Snails' appetite for green material, 159, 196  
 Snipe flying with one of her brood between her legs and breast, 131  
*Solaster papposus*, 437  
*Solea lascaris*, 4  
 Sparrow, bark-peeling habit of, 36,—robbing Starling, 271,—and Starling in captivity, 116; Tree, in Donegal, notes on, 297, 302  
 'Spencer Fullerton Baird,' 397  
 Spider-Crab, Four-horned, habits of (figs. 1 and 2), 245-56  
 Spider-Crabs fastening beef to their bodies, 438  
 Spoonbills on Breydon Broad, 122, 130; in John Ray's time, 123  
 Sprat-harvests off East Coast, 1, 15  
 Sprats as manure and as Sardines, 1; at Southwold, 16  
 Squirrel, Grey, in Buckinghamshire and elsewhere, 354, 393  
 Squirrel and Sparrow-Hawk, strange nesting associations of, 269  
 Starfish, Common, attacking *Syngnathus acus*, 437; the way it eats a Pipe-fish (two figs.), 147-50  
 Starfishes feeding upon *Siphonostoma typhle*, notes on (four figs.), 213-16  
 Starling, depredations of, 137; great migration at Great Yarmouth, 128; Rose-coloured, in Bedfordshire, 118

*Stenorhynchus phalangium*, 428  
*Stoat swimming after its prey*, 354  
*Stomoxys calcitrans*, 75  
*Stomphia churchiae*, 22  
*Sun-Star*, rate of locomotion in a,  
 437  
*Sussex, Land and Freshwater Mol-*  
*lusca of*, 175-81, 263-8, 308-14,  
 347-53, 384-91  
*Sula bassana*, 79  
*Swallow*, late nesting of, 467  
*Swifts*, migration of, 319  
*Sylvia atricapilla*, Newton on, 182;  
 conspicillata, 240  
*Syngnathus acus*, 467  
  
*Tarentola mauritanica*, 321  
*Tench*, some experiments on colour-  
 changes in, 337-9  
*Tern*, Roseate, on Norfolk coast, 125  
*'Text-book of Embryology.'* 37  
*Thalassochelys caretta*, 327  
 THOMAS PRICHARD NEWMAN, obitu-  
 ary notice of (separate leaf, front  
 of November 'Zoologist')  
*'Through Western Madagascar'*, 400  
*Thrush*, Mistle, curious nesting-  
 places of, 79, 115; "Fulser," Nor-  
 folk name for, 127  
*Thrushes in winter*, distribution of,  
 115  
*Tinca vulgaris*, 337  
*Tit*, Bearded, 367; Long-tailed, in  
 London garden, 80  
*Totanus ochropus*, 68  
*Toxotes jaculator*, 105  
*'Transactions of Paisley Naturalists'*  
*Society*, 78  
*Trawl-net destructive to Herrings in*  
 the ova, 15  
*Trigla hirundo*, 9  
*Tringa alpina*, 395  
*Trochus cinerarius*, 451  
*Troglodytes parvulus*, nesting of,  
 35  
*Turdus fuscatus*, 279; *merula*, *musi-*  
*cus*, and *viscivorus*, 79; *torquatus*,  
 Newton on, 185  
*'Typical Flies'*, 399  
  
*Urticina felina*, 22  
  
*Vallonia miserrima*, 120  
*Valvata macrostoma* in Sussex  
 (Plate IV.), 389  
*Vanellus vanellus*, 217  
  
*Vanessa antiopa* in Camberwell dis-  
 trict, 272; *urticæ*, 79  
**VARIETIES**—Blackbird, 36, 145; Bull-  
 finch, 145; Cuckoo (egg), 357;  
 Duck-hybrids, 272; Fowl, herma-  
 phrodite, 194; Hare, 67; House-  
 Martin, 375; Redbreast, 153;  
 Robin, 145; Serotine Bat, 315;  
 Snipe, 145; Swallow, 145; Water-  
 Shrew, 226; Water-Vole, 392;  
 Wood-Pigeon, 469  
**Vertebrate Fauna of North Wales**,  
 40  
*Vesperilio mystacinus*, 227  
*Vesperugo serotinus*, 315  
*'Vigour and Heredity'*, 469  
*Vole, Water*, albino, 392  
  
*Wagtail*, Grey-headed, in Norfolk,  
 125  
**WALES**—Vertebrate Fauna of North  
 Wales, 40; Birds of Cardiff, 54-7;  
 Squirrel and Sparrow-Hawk, 269;  
 Bird-notes from Cardiff, 468  
*Wandle freshwater shells*, additions  
 to list of, 359  
*Warbler*, Aquatic, on migration, ob-  
 tained on Tuskar Rock, with special  
 reference to plumage markings as  
 compared with those of Sedge-  
 Warbler (Plate I.), 81-92.—Pre-  
 vious occurrences in British Isles,  
 89-91.—General geographical dis-  
 tribution, 92.—Occurrences in Brit-  
 ish Isles, 152; Willow, singular  
 nests of, 357  
*War-notes*, ornithological, from  
 Great Yarmouth, 93-7  
*'Water-Reptiles of the Past and*  
*Present'*, 72  
*Weasel feeding upon Frogs*, 392  
*Whale* on Lincolnshire coast in  
 seventeenth century, 466  
*Whimbrel* in Iceland, 174  
*Whiting season off East Coast*, 2, 6,  
 9, 10  
*'Wonders of Animal Life'*, 440  
*Wrass*, Comber, at Great Yarmouth,  
 157  
*Wren*, Willow, singular nests of, 316,  
 357  
  
*Xenopus*, 200  
  
*Zamenis gemonensis*, 326; var. car-  
 bonaria, 326

## ILLUSTRATIONS IN TEXT.

	PAGE
<i>Blennius gattorugine</i>	11
Location of the Sacculus and its contained Otoliths in Fishes:—	
Fig. VII. <i>Acipenser sturio</i>	25
Fig. IV.: 1-12. Explained in text	27
Fig. V.: 1-12. Ditto	29
Fig. VI.: 1-12. Ditto	33
Sense of Direction in Birds: Sketch-map of Coast	44
Pharyngeal Teeth of Fishes:—	
ATHERINIDÆ.—Fig. I.: <i>Atherinichthys argentinense</i>	100
OPHIOCEPHALIDÆ.—Fig. II.: <i>Ophiocephalus marulius</i>	102
EMBIOTOCIDÆ.—Fig. I.: <i>Neoditrema ransonettii</i> , <i>Ditrema temminckii</i> , and <i>Hysteroxarpus traski</i> .	457
Common Brittlestar ( <i>Ophiothrix fragilis</i> )	119
Ornithological Report for Norfolk (1914):—	
Map: Wind and Weather, March 10	128
Cormorants in Norfolk (1914)	135
<i>Platella maculipennis</i> (natural size)	137
Map: Direction and Force of Wind, Nov. 18	143
The way in which a Starfish eats a Pipe-fish:—	
Fig. 1: Starfish with <i>Nerophis aequoreus</i>	148
Fig. 2: Another Starfish with <i>N. aequoreus</i>	149
Fauna of the Chess and Gade:—	
Fig. 19.— <i>Notommata lacinulata</i>	163
Fig. 20.— <i>Euchlanis dilatata</i>	164
Figs. 21, 22.—Sections of <i>Cyclops serrulatus</i> (see text, p. 415)	414
Figs. 23-25.—Ditto (see text, pp. 415, 416)	415
<i>Kerona polyporum</i> (parasitic on <i>Hydra</i> )	189
Behaviour of a captive Rockling: Plan of Aquarium to show resting-places and routes of a captive Rockling	191
Starfishes feeding upon <i>Siphonostoma typhle</i> :—	
Fig. 1, Fig. 2	214
Fig. 3	215
Fig. 4	216
Abnormal Hands of Edible Crab ( <i>Cancer pagurus</i> )	234
Habits of Four-horned Spider-Crab:—	
Fig. 1, An adult female, to show a characteristic resting and watching attitude	247
Fig. 2, Outline of the body and right limbs of an adult female, mainly to show the tracts of hook-like hairs, and the way in which weed is thrust into two of the alleys	250
The lapillus in Fishes: Twenty-four figures, with list of species to which they belong (see text)	259
Reptiles of Maltese Islands:—	
The Lizard from Filfola	322
1, Fungus Rock Lizard; 2, St. Paul's Islands Lizard; 3, Typical Wall-Lizard from Malta	323
Fungus Rock Lizard discovered lately by Dr. Gulia on the Fungus Rock (Gozo)	325